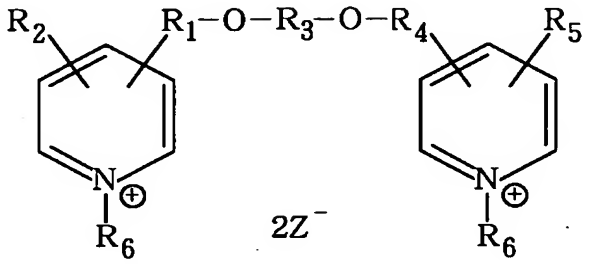
CLAIMS

[1] A process for producing a microbicidal pyridine compound represented by the following formula (7):

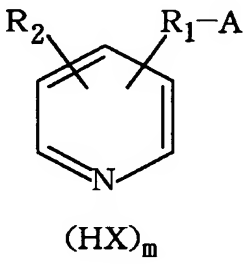
Formula (7)



which comprises:

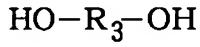
reacting a pyridine compound represented by the following formula (1):

Formula (1)



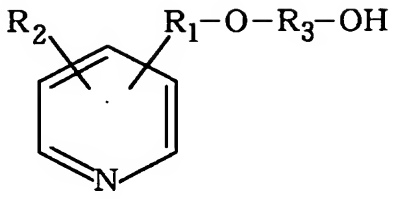
and a diol represented by the following formula (2):

Formula (2)



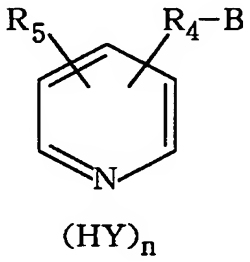
in the presence of a strong base to produce a pyridine compound represented by the following formula (3):

Formula (3)



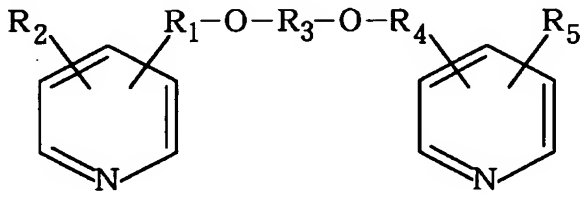
reacting said compound and a pyridine compound represented by the following formula (4):

Formula (4)



in the presence of a strong base to produce a pyridine compound represented by the following formula (5):

Formula (5)



reacting said compound and a halogen compound or a sulfonate ester compound represented by the following formula (6):

Formula (6)

$$R_6-Z$$

wherein in the formulae (1) to (7), A and B are each a substituent capable of functioning as a leaving group under an action of a base to make it possible to form an alkyl cation; X and Y are each a counter anion for an inorganic or organic protonic acid; m and n each stands for 0 or 1; R_1 and R_4 may be the same or different and are each a linear or branched alkyl group; R_2 and R_5 are hydrogen atoms, or may be the same or different and are each a halogen atom, lower alkyl group or lower alkoxy group; R_3 is a linear or branched alkyl group having 2 to 12 carbon atoms; R_6 is a linear or branched alkyl group having 1 to 18 carbon atoms; and Z is a chlorine atom, bromine atom or iodine atom, or an OSO_2R_7 group in which R_7 is a lower alkyl group or a substituted or unsubstituted phenyl group.

[2] The process according to claim 1, wherein said compound represented by the formula (1) and said compound represented by the formula (4) are the same.

[3] The process according to claim 1, wherein in the formula (1) and formula (4), R_1 and R_4 are each a CH_2 group, and R_2 and R_5 are each a hydrogen atom.

[4] The process according to claim 1, wherein said diol represented by the formula (2) is 1,4-butanediol.

[5] The process according to claim 1, wherein in the

formulae (1) to (7), R_1 and R_4 are each a CH_2 group; R_2 and R_5 are each a hydrogen atom; R_3 is a linear or branched, alkyl group having 2 to 12 carbon atoms; A and B are each a chlorine atom, bromine atom or iodine atom; X and Y are each a chlorine anion, bromine anion, iodine anion, lower alkylsulfonyloxy anion, substituted or unsubstituted benzenesulfonyloxy anion, (lower alkyl)carboxy anion, substituted or unsubstituted, benzenecarboxy anion, or acetoxy anion; and m and n each stands for 0 or 1.

[6] The process according to claim 5, wherein A and B are each a chlorine atom, X and Y are each a chlorine anion, benzenesulfonyloxy anion, or acetoxy anion.

[7] The process according to claim 1, wherein said strong base is at least one of alkali metals, hydrides and hydroxides thereof, alkyllithiums, phenyllithium, and alkali metal alkoxides.

[8] The process according to claim 1, wherein said strong base is sodium tertiary-butoxide or potassium tertiary-butoxide.

[9] The process according to claim 1, wherein said reactions are each conducted in a solvent, and said solvent is an aprotic polar solvent.

[10] The process according to claim 9, wherein said solvent is dimethylformamide.

[11] The process according to claim 1, wherein said reaction with said compound represented by the formula (4) is

conducted in continuation without isolation of said compound represented by the formula (3).

[12] The process according to claim 1, wherein in the formula (3), R_1 is a linear or branched alkyl group having 1 to 4 carbon atoms, R_2 is a hydrogen atom, halogen atom, lower alkyl group or lower alkoxy group, and R_3 is a linear or branched alkyl group having 2 to 12 carbon atoms.

[13] The process according to claim 12, wherein R_1 is a CH_2 group and R_2 is a hydrogen atom.

[14] The process according to claim 12, wherein R_1 is a CH_2 group, R_2 is a hydrogen group, and R_3 is a linear alkyl group having 4 carbon atoms.

[15] The process according to claim 1, wherein R_1 is a linear or branched alkyl group having 1 to 4 carbon atoms, R_2 is a hydrogen atom, halogen atom, lower alkyl group or lower alkoxy group, R_3 is a linear or branched alkyl group having 2 to 12 carbon atoms, R_4 is a linear or branched alkyl group having 1 to 4 carbon atoms, R_5 is a hydrogen atom, halogen atom, lower alkyl group or lower alkoxy group.

[16] The process according to claim 15, wherein R_1 and R_4 are each a CH_2 group, and R_2 and R_5 are each a hydrogen atom.

[17] The process according to claim 15, wherein R_3 is a linear alkyl group having 4 carbon atoms.

[18] The process according to claim 1, wherein R_6 is a linear or branched alkyl group having 1 to 18 carbon atoms, and Z is a chlorine atom, bromine atom or iodine atom.

[19] The process according to claim 18, wherein R_6 is a linear alkyl group having 8, 10 or 12 carbon atoms.

[20] The process according to claim 18, wherein R_6 is a linear alkyl group having 8, 10 or 12 carbon atoms, and Z is a bromine atom.

[21] The process according to claim 1, wherein a solvent for use in the reaction of said pyridine compound represented by the formula (5) and said halogen compound or sulfonate ester compound represented by the formula (6) is a lower aliphatic alcohol or an aprotic polar solvent.

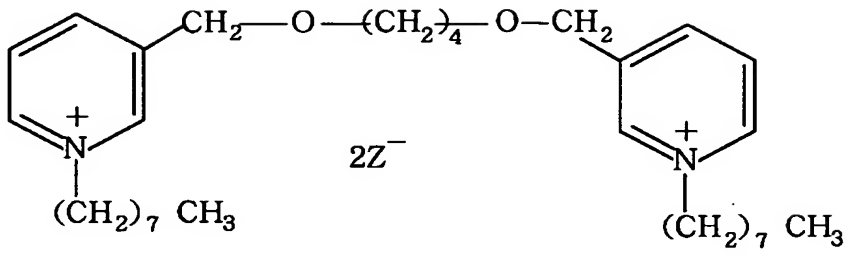
[22] The process according to claim 21, wherein said solvent is dimethylformamide.

[23] The process according to claim 1, wherein said halogen compound or sulfonate ester compound represented by the formula (6) is used in excess without using said solvent.

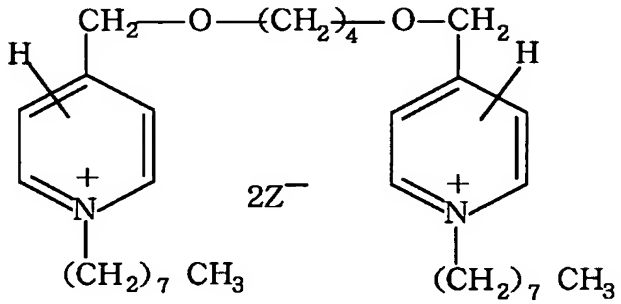
[24] The process according to claim 1, wherein said pyridine compound represented by the formula (5) is reacted, without isolation, with said halogen compound or sulfonate ester compound represented by the formula (6).

[25] A microbicidal pyridine compound represented by the following formula (8) or formula (9):

Formula (8)



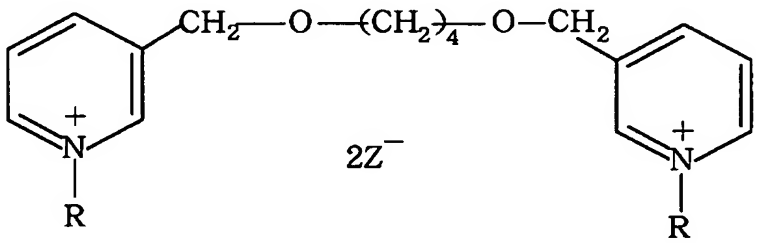
Formula (9)



wherein Z is a chlorine atom, bromine atom or iodine atom or an OSO_2R_1 group in which R_1 is a lower alkyl group or a substituted or unsubstituted phenyl group.

[26] A microbicidal pyridine compound represented by the following formula (10):

Formula (10)



wherein R is a $-(CH_2)_9CH_3$ group or a $-(CH_2)_{11}CH_3$ group, Z is a chlorine atom, bromine atom or iodine atom or an OSO_2R_1 group in which R_1 is a lower alkyl group or a substituted

or unsubstituted phenyl group.